CLAIMS

What is claimed is:

1. An antiloading composition comprising a first organic compound, wherein the first compound:

has a water contact angle criterion $W°_g$ that is less than a water contact angle $W°_z$ for zinc stearate; and

satisfies at least one condition selected from the group consisting of a melting point T_{melt} greater than about 40 °C, a dynamic coefficient of friction F less than about 0.4, and an antiloading criterion P greater than about 0.2.

2. The composition of Claim 1, wherein the first compound satisfies at least one condition selected from the group consisting of $W°_g$ less than about 100°, T_{melt} greater than about 70 °C, F less than about 0.4, and P greater than about 0.2.

3. The composition of Claim 1, wherein the first compound satisfies at least one condition selected from the group consisting of $W°_g$ less than about 70°, T_{melt} greater than about 90 °C, F less than about 0.3, and P greater than about 0.3.

4. The composition of Claim 1, wherein the first compound:

satisfies each condition T_{melt}, F, and P of Claim 1; and

is represented by a formula selected from the group consisting of $R\text{-}OSO_3^-M^+$, $RCONH(CH_2)_3N+ (CH_3)_2CH_2COO\text{-}$, $R\text{-}CONR'CH_2CO_2^-M^+$, and $R\text{-}O(CO)CH_2OSO_3^-M^+$, wherein

R is C6-C18 linear alkyl;

R' is C1-C4 linear alkyl; and

M^+ is an alkali metal ion.

5. The composition of Claim 1, wherein $W°_g$ for the first compound is about 0°.

6. The composition Claim 1, wherein the first compound is selected from the group consisting of sodium lauryl sulfate, sodium decyl sulfate, sodium octyl sulfate, sodium lauroyl sarcosinate, lauramidopropyl betaine, and sodium lauryl sulfoacetate.

7. The composition of Claim 1, further including a second organic compound having a W^{o}_{g} different from that of the first compound, wherein the composition has a particular water contact angle W^{o}_{p} that is determined, at least in part, by the independent W^{o}_{g} of each compound and the proportion of each compound in the composition.

8. The composition of Claim 7, wherein the composition is selected from a premixed composition and a composition having at least two separate mixable components.

9. An abrasive product, comprising:
   a binder support substrate;
   a binder;
   an abrasive material affixed to the support substrate by the binder; and
   an antiloading composition comprising a first organic compound, wherein the first compound:
      has a water contact angle criterion W^{o}_{g} that is less than a water contact angle W^{o}_{z} for zinc stearate; and
      satisfies at least one condition selected from the group consisting of a melting point T_{melt} greater than about 40 °C, a dynamic coefficient of friction F less than about 0.4, and an antiloading criterion P greater than about 0.2.

10. The abrasive product of Claim 9, wherein the first compound satisfies at least one condition selected from the group consisting of $W°_g$ less than about 100°, T_{melt} greater than about 70 °C, F less than about 0.4, and P greater than about 0.2.

11. The abrasive product of Claim 9, wherein the first compound satisfies at least one condition selected from the group consisting of $W°_g$ less than about 70°, T_{melt} greater than about 90 °C, F less than about 0.3, and P greater than about 0.3.

12. The abrasive product of Claim 9, wherein the first compound:

satisfies each condition T_{melt}, F, and P of Claim 9; and

is represented by a formula selected from the group consisting of $R\text{-}OSO_3^-M^+$, $RCONH(CH_2)_3N+ (CH_3)_2CH_2COO\text{-}$, $R\text{-}CONR'CH_2CO_2^-M^+$, and $R\text{-}O(CO)CH_2OSO_3^-M^+$, wherein

R is C6-C18 linear alkyl;

R' is C1-C4 linear alkyl; and

M^+ is an alkali metal ion.

13. The abrasive product of Claim 9, wherein $W°_g$ for the first compound is about 0°.

14. The abrasive product Claim 9, wherein the first compound is selected from the group consisting of sodium lauryl sulfate, sodium decyl sulfate, sodium octyl sulfate, sodium lauroyl sarcosinate, lauramidopropyl betaine, and sodium lauryl sulfoacetate.

15. The abrasive product of Claim 9, wherein the first compound is sodium lauryl sulfate.

16. The abrasive product of Claim 9, further including a second organic compound having a $W°_g$ different from that of the first compound, wherein the composition has a particular water contact angle $W°_p$ that is determined, at least in part, by the

independent W^{o}_{g} of each compound and the proportion of each compound in the composition.

17. A method of grinding a surface, comprising:

grinding a work surface by applying an abrasive product to the work surface to create work surface swarf; and

providing an effective amount of an antiloading composition at the interface between the abrasive product and the work surface swarf;

wherein:

the abrasive product comprises a binder support substrate, a binder, and an abrasive material bound to the support substrate by the binder;

the antiloading composition comprises a first organic compound, wherein the first compound:

has a water contact angle criterion W^{o}_{g} that is less than a water contact angle W^{o}_{z} for zinc stearate; and

satisfies at least one condition selected from the group consisting of a melting point T_{melt} greater than about 40 °C, a dynamic coefficient of friction F less than about 0.4, and an antiloading criterion P greater than about 0.2.

18. The method of Claim 17, wherein the first compound satisfies at least one condition selected from the group consisting of W^{o}_{g} less than about 100°, T_{melt} greater than about 70 °C, F less than about 0.4, and P greater than about 0.2.

19. The method of Claim 17, wherein the first compound satisfies at least one condition selected from the group consisting of W^{o}_{g} less than about 70°, T_{melt} greater than about 90 °C, F less than about 0.3, and P greater than about 0.3.

20. The method of Claim 17, wherein the first compound:

satisfies each condition T_{melt}, F, and P of Claim 19; and

is $R\text{-}OSO_3^-M^+$, $RCONH(CH_2)_3N+ (CH_3)_2CH_2COO\text{-}$, $R\text{-}CONR'CH_2CO_2^-M^+$, or $R\text{-}O(CO)CH_2OSO_3^-M^+$, wherein

R is C6-C18 linear alkyl;

R' is C1-C4 linear alkyl; and

M^+ is an alkali metal ion.

21. The abrasive product of Claim 17, wherein W^o_g for the first compound is about 0°.

22. The method of Claim 17, wherein the first compound is selected from the group consisting of sodium lauryl sulfate, sodium decyl sulfate, sodium octyl sulfate, sodium lauroyl sarcosinate, lauramidopropyl betaine, and sodium lauryl sulfoacetate.

23. The method of Claim 17, further comprising grinding the surface to a particular water contact angle W^o_p by employing a second organic compound having a W^o_g different from that of the first compound, wherein W^o_p is determined, at least in part, by the independent W^o_g of each compound and the proportion of each compound employed.

24. The method of Claim 23, further comprising selecting W^o_p for compatibility with a coating to be applied to the ground work surface.

25. The method of Claim 23, wherein the step of providing the antiloading composition comprises applying at least one compound to the abrasive product or the work surface.

26. The method of Claim 23, wherein the abrasive product comprises at least one of the compounds.

27. A method of selecting an antiloading compound, comprising selecting an organic compound, wherein the compound:

has a water contact angle criterion $W°_g$ that is less than a water contact angle $W°_z$ for zinc stearate; and

satisfies at least one condition selected from the group consisting of a melting point T_{melt} greater than about 40 °C, a dynamic coefficient of friction F less than about 0.4, and an antiloading criterion P greater than about 0.2.

28. The method of Claim 27, wherein the first compound satisfies at least one condition selected from the group consisting of $W°_g$ less than about 100°, T_{melt} greater than about 70 °C, F less than about 0.4, and P greater than about 0.2.

29. The method of Claim 27, wherein the first compound satisfies at least one condition selected from the group consisting of $W°_g$ less than about 70°, T_{melt} greater than about 90 °C, F less than about 0.3, and P greater than about 0.3.

30. The method of Claim 27, wherein the first compound satisfies each condition for T_{melt}, F, and P.

31. The method of Claim 28, wherein the first compound satisfies at least two conditions selected from $W°_g$, T_{melt}, F, and P in Claim 28.

32. The method of Claim 29, wherein the first compound satisfies at least three conditions selected from $W°_g$, T_{melt}, F, and P in Claim 29.

33. The method of Claim 27, wherein $W°_g$ is about 0°.

34. The method of Claim 27, further comprising:

selecting a second organic compound, wherein the second compound has a W^o_g different from that of the first compound;

determining a proportion for each compound, whereby a composition comprising the compounds in the proportions has a particular water contact angle W^o_p that is due, at least in part, to the W^o_g of each compound and the proportion thereof.

35. The method of Claim 29, further comprising selecting a W^o_p for compatibility with a particular coating.